

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A heat treatment apparatus for heating a substrate by irradiating ~~[[a]] the substrate with flashlight thereto~~, comprising:

- a light source having a flash lamp to generate said flashlight;
- a chamber provided under said light source;
- a susceptor having a receiving surface for holding a substrate in a substantially horizontal position in said chamber;
- a lifting mechanism operable for actively lifting up said substrate held by said susceptor from ~~an upper~~ said receiving surface of said susceptor; and
- a lift control ~~element for controlling that controls~~ said lifting mechanism to operate said lifting mechanism before the irradiation of ~~[[a]] flashlight~~ from said light source to lift ~~[[up]]~~ said substrate held by said susceptor ~~as well as from said receiving surface and~~ to stop the operation of said lifting mechanism ~~at as~~ irradiation of ~~[[a]] flashlight~~ from said light source ~~to cause irradiates said substrate, so that said substrate floats toward said receiving surface supported solely by a gas layer to be sandwiched between said upper receiving surface of said susceptor and said substrate for bringing said substrate into a floating state.~~

2. (Currently Amended) The heat treatment apparatus according to claim 1, wherein said lifting mechanism includes:

- support pins insertable into said susceptor and capable of mounting thereon a substrate with top ends thereof extending out of said ~~upper~~ receiving surface of said susceptor; and
- an elevating mechanism for moving said support pins upwardly/downwardly relatively to said susceptor between a position where said top ends of said support pins are located under said ~~upper~~ receiving surface of said susceptor and a position where said top ends of said support pins extend out of said ~~upper~~ receiving surface of said susceptor to support said substrate held by said susceptor, wherein

said lift control ~~element~~ controls said elevating mechanism to cause said support pins to extend out of said upper receiving surface of said susceptor before irradiation of a flashlight from said light source to lift up said substrate held by said susceptor from said upper receiving surface of said susceptor as well as to move said support pins downwardly to a position under said upper receiving surface of said susceptor at irradiation of [[a]] flashlight from said light source to cause only the [[a]] gas layer to be sandwiched between said upper receiving surface of said susceptor and said substrate for bringing said substrate into a floating state.

3. (Currently Amended) The heat treatment apparatus according to claim 1, wherein said lifting mechanism includes a gas discharging mechanism for discharging gas from said upper receiving surface of said susceptor toward a lower surface of said substrate held by said susceptor, and

said lift control ~~element~~ controls said gas discharging mechanism to cause said gas discharge mechanism to discharge gas toward said lower surface of said substrate held by said susceptor before irradiation of a flashlight from said light source to cause said substrate held by said susceptor to be lifted over said upper receiving surface of said susceptor as well as to cause said gas discharge mechanism to stop discharging gas at irradiation of the [[a]] flashlight from said light source to cause only the [[a]] gas layer to be sandwiched between said upper receiving surface of said susceptor and said substrate for bringing said substrate into a floating state.

4. (Currently Amended) The heat treatment apparatus according to claim 1, further comprising a preheating mechanism for preheating said substrate held by said susceptor before irradiation of a flashlight from said light source, wherein

said lift control ~~element~~ operates said lifting mechanism after the temperature of said substrate held by said susceptor reaches a predetermined preheated temperature.

5. (Currently Amended) A heat treatment method of heating a substrate by irradiating [[a]] the substrate with flashlight ~~thereto~~, comprising the steps of:

- a) holding a substrate on a receiving surface of a susceptor in a substantially horizontal position;
- b) operating a lifting mechanism to lift [[up]] said substrate held by said susceptor from ~~an upper~~ said receiving surface of said susceptor;
- c) causing said lifting mechanism to stop operating ~~to cause~~ leaving only a gas layer ~~to be~~ sandwiched between said ~~upper~~ receiving surface of said susceptor and said substrate for bringing said substrate into a floating state; and
- d) causing a flash lamp to irradiate a flashlight toward said substrate ~~being while~~ in a floating state and after stopping the operation of said lifting mechanism.

6. (Currently Amended) The heat treatment method according to claim 5, wherein said step b) includes the step of causing support pins insertable into said susceptor to extend out of said ~~upper~~ receiving surface of said susceptor to lift [[up]] said substrate held by said susceptor from said ~~upper~~ receiving surface of said susceptor, and

said step c) includes the step of moving said support pins downwardly to a position under said ~~upper~~ receiving surface of said susceptor to cause only a gas layer to be sandwiched between said ~~upper~~ receiving surface of said susceptor and said substrate for bringing said substrate into a floating state.

7. (Currently Amended) The heat treatment method according to claim 5, wherein said step b) includes the step of discharging gas from said ~~upper~~ receiving surface of said susceptor toward a lower surface of said substrate held by said susceptor to lift [[up]] said substrate held by said susceptor from said receiving surface, and

said step c) includes the step of stopping discharge of said gas to cause only a gas layer to be sandwiched between said ~~upper~~ receiving surface of said susceptor and said substrate for bringing said substrate into a floating state.

8. (Currently Amended) The heat treatment method according to claim 5, further comprising the step of

e) preheating said substrate held by said susceptor before irradiation of ~~[[a]]~~ flashlight from said light source, wherein

said step b) is executed after the temperature of said substrate held by said susceptor reaches a predetermined preheated temperature.

9. (Currently Amended) A heat treatment method of heating a substrate by irradiating ~~[[a]]~~ the substrate with flashlight ~~thereto~~, comprising the steps of:

- a) holding a substrate over a susceptor in a substantially horizontal position;
- b) moving said susceptor and said substrate upwardly/downwardly relatively to each other to mount said substrate on ~~an upper~~ a receiving surface of said susceptor; and
- c) causing a flash lamp to irradiate ~~[[a]]~~ flashlight toward said substrate while said substrate ~~is floating with~~ passively floats solely on a gas layer sandwiched between said ~~upper~~ receiving surface of said susceptor and said substrate after said substrate is mounted on said ~~upper~~ receiving surface of said susceptor.

10. (Currently Amended) The heating method according to claim 9, wherein said flash lamp irradiates ~~[[a]]~~ the flashlight toward said substrate within seventy seconds after said substrate is mounted on said ~~upper~~ receiving surface of said susceptor.

11. (Currently Amended) A heat treatment apparatus for heating a substrate by irradiating ~~[[a]]~~ the substrate with flashlight ~~thereto~~, comprising:

- a light source having a flash lamp;
- a chamber provided under said light source;
- a susceptor having a receiving surface for holding a substrate in a substantially horizontal position in said chamber;
- support pins insertable into said susceptor and capable of mounting thereon said substrate with top ends thereof extending out of ~~an upper~~ said receiving surface of said susceptor;

an elevating mechanism for moving said support pins upwardly/downwardly relatively to said susceptor between a position where top ends of said support pins are located under said upper receiving surface of said susceptor and a position where said top ends of said support pins extend out of said upper receiving surface of said susceptor to support said substrate held by said susceptor; and

an irradiation control element for controlling said light source to cause said flash lamp to irradiate [[a]] flashlight toward said substrate while said substrate is passively floating with only a gas layer sandwiched between said upper receiving surface of said susceptor and said substrate after said elevating mechanism moves said susceptor and said substrate mounted on said support pins upwardly/downwardly relatively to each other to mount said substrate on said upper receiving surface of said susceptor.

12. (Currently Amended) The heat treatment apparatus according to claim 11, wherein said irradiation control element controls said light source to cause said flash lamp to irradiate a flashlight toward said substrate within seventy seconds after said substrate is mounted on said upper receiving surface of said susceptor.